

CONTEMPORARY ANALYSIS Work smart,

Preparing for a Pandemic:

How predictive analytics helped prepare for the H1N1 Pandemic.

What if you could more accurately plan what to do in case of emergency? The best way to prepare for an emergency is to know what is possible. Predictive analytics builds simulations that can help you and your team know what to do when demand spikes, a key supplier is lost, a facility is compromised, the economy goes into recession, or when important customers default on their obligations to pay.

By analyzing past events, Contemporary Analysis was able to help a regional healthcare system prepare for the 2009 H1N1 Swine Flu Pandemic. From April 2009 to April 2010, demand for healthcare spiked putting pressure on nursing staff. The Center for Disease Control estimates that between 43 million and 89 million cases of H1N1 occurred, including between 195,000 and 403,000 related hospitalizations, and between 8,870 to 18,300 deaths in 2009. Estimates are required because infections, hospitalizations and deaths from the flu are systematically under reported. The following chart highlights the spike in demand relative to other flu seasons:



The problem

We were approached by an analytics manager at a staffing company. Recently the manager had been working with a large regional healthcare system with 10 hospitals, to prepare a staffing plan for the upcoming flu season.

Due to the H1N1 Swine Flu Pandemic, the healthcare system was expecting the coming flu season to be one of the worst and it was likely they wouldn't have nursing staff to cover the demand. Visiting and temporary nurse staff were the next best alternative, but they were becoming scarce as recruiters were busy getting them placed.

If the manager was going to get the proper staff levels she would need to act quickly and have a plan. She had the data and understood the assumptions, but needed help putting it together at a low cost . CAN's ability to use predictive analytics and data science on her data, while providing results in less than 30 days made her choice simple.

The solution

CAN started by digging into the company's data - previous flu season hours, nurse schedules, hourly requirements per nurse, training and orientation requirements, and number of active nurse recruiters. This was data that was already available. Using the data we then developed mathematical models to predict staffing needs for the upcoming flu season. Our client was then able to engage our Data Scientist's during the modeling process and test several "what-if" scenarios based on the models.

After the final analysis was complete, the client was provided a final report that detailed the following for each week of the flu season:

- 1. Total Nurse staff needed
- 2. Total visiting and temporary nurse staff needed to fill gaps
- 3. Timing of hires to fill necessary gaps
- 4. Number of nurse recruiters needed to achieve adequate staff levels

The results

The manager used the results to develop a staffing plan for their client. This staffing plan allowed hospital executives to make strategic hiring decisions and manage the recruiting process. Executives reviewed their plan each week and monitored staffing levels. Extra attention was given to plan for the three periods where current staffing was identified to be too low.

Conclusion

Predictive analytics is ideally suited to help you and your team prepare for — and respond to — emergencies by using the patterns in the data you already collect to predict the future. With CAN's proprietary Portal system you can run live simulations on real data, and work with your team about how you will respond.



Since 2008, Contemporary Analysis has used predictive analytics and data science to help companies of all sizes work smart.

Our five products use data to help our clients improve their sales, marketing, customer service, management, and strategic plans.

Our solutions are used by fast-growing technology companies, Fortune 500s, as well as small- and medium-sized organizations. Our clients are in a variety of industries including construction, insurance, education, healthcare, government, not-for-profit, software and engineering.

Our vision is to make predictive analytics simple and affordable because all companies, not just the largest, should be able to benefit from predictive analytics and data science.

Our principles:

1. We care about business.

Each business deserves a custom solution. Problems are our passion.

2. We solve core business problems.

We make a big impact quickly. Value is our focus.

3. We don't have all the answers.

We help our clients make better decisions. Less wrong is the goal.

4. We are technology agnostic.

We focus on the solution. Technology is just a tool.

5. Our job is to solve problems, not introduce complexity.

Our solutions are simple because our clients are busy.